"An Olive orchard is a gold mine on the face of the earth."

—*Italian Proverb.*

Olive Culture in California

—BY—

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—OF—

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This pamphlet will be mailed free to all who apply for it.

To Nurserymen, Tree Dealers and Planters:

I offer for the Season of 1894, a large stock of one and two year old Olive trees, comprising nearly sixty sorts.

I have made a specialty of those highly esteemed varieties, the Nevadillo blanco, Manzanillo and Mission, which I can furnish in large and small lots, to the extent of several hundred thousand.

Constant and watchful care is exercised in my nurseries to prevent varieties from becoming mixed, and as the expert is able to distinguish most varieties from each other by the habit of growth peculiar to each, it is confidently believed that all trees sent out by me will prove true to name.

Persons wishing to purchase trees from the nursery, or rooted cuttings from the propagating houses, are requested to write for prices, stating age, number, and varieties desired.

Address, **JOHN S. CALKINS,**
POMONA, CAL.

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INSPECTOR'S CERTIFICATE.

I have carefully examined the olive nurseries of John S. Calkins, and find them free of insect pests.

T. B. ATKINSON,
Horticultural Inspector.

Los Angeles Printing Co., 110 South Broadway.

Olive Culture in California.

As I am in constant receipt of letters of inquiry in regard to olive culture, I publish this little Treatise for free distribution with the hope that it will in some degree lighten the burden of a large correspondence. My connection with the nursery business in this county dates back to 1878 and for nearly five years past I have made a specialty of growing olive trees; having carefully studied the olive industry during the time, I trust the information embodied in these pages will be found practical and useful to those interested in the subject.

PROPAGATION OF THE TREES.—In propagating olive trees, I use cuttings of mature wood, some three inches long, with two leaves near the top; these are planted in sand under cover during autumn and winter. A portion of the cuttings will produce roots in the course of four to eight months, when they are planted out in nursery rows in the open ground. By this method, well-rooted and vigorous trees are produced, which have yielded fruit in four years from the time of planting the little twigs in the sand; but the most skillful attention is required to prevent the little twigs from losing their leaves; if that happens, they decay without becoming rooted. Nothing is better calculated to take the conceit out of a nurseryman than the result of his first attempt to root olive cuttings under glass. The rooted cuttings may be planted out in nursery form during the spring, summer, and autumn months. Some varieties of olive trees are inclined to grow bushy and forked in the nursery without an upright leader. When the forked branches are cut off at the time of planting in orchard, some of the trees may be a little crooked, perhaps causing dissatisfaction to purchasers unacquainted with their habit of growth. If it is attempted to grow them perfectly straight by cutting off the side branches as they appear, the trees will come out so slender as to require to be staked in the nursery and they will have poor roots, as the less branches the less roots. As it is mv aim to grow stocky and well-rooted trees, I find it best to do very little trimming in the nursery.

THE AGE TO TRANSPLANT.—Olive trees may be transplanted successfully from the nursery to the orchard at one year of age, when they are from one to two feet high, though they require more careful handling than older trees. Two-year-old trees usually run from three to five feet high, and are generally preferred by planters to yearlings, as they withstand exposure at time of planting better and require less nursing in orchard the first year.

TRANSPLANTING.—Although olive trees are very tenacious of life when once established in the ground, they require the utmost care in transplanting, especially yearlings, and should be carefully protected from the sun and wind, both tops and roots, from the time they are taken up till they are planted; the ground should be well settled about their roots during the operation of planting, which is best done by means of water; it is essential that the ground about their roots should be quite moist for the first few weeks after setting them. If the rains do not supply sufficient moisture, they should be watered. It is not uncommon for the leaves to drop off after they are planted, or even before, but the trees will come out again in a leaf and thrive, if the vitality of the roots has not been destroyed by undue exposure. The trees should be firmly tied to strong stakes well driven in the ground at the time of planting.

TIME TO TRANSPLANT.—This should be done while the trees are dormant, or nearly so; in general, they are in this condition during December, January, February and March, though some seasons the growth does not cease during December and commences again in March in the southern part of the state. In some places where the olive thrives the ground freezes several inches deep; in such locations it would be well to defer planting till the freezes are over. The planting season may be prolonged for several weeks by taking up the trees before they commence to grow and "heeling them in" in a shady place, which will retard the new growth. I have transplanted many trees thus treated as late as May with only trifling loss; but it should be remembered by those who plant on unirrigable lands that trees planted in winter get the benefit of more rainfall than those planted during the spring.

PRUNING.—The practice of cutting off the side branches of olive trees close to the body and up to three or four feet at the time of transplanting, with a view of forming a head the first year, is usually attended with unsatisfactory results. It is the nature of olive trees to grow bushy while young, and if thus pruned they become slender and top-heavy, the stem often winding around the stake like a grapevine. The following method is preferred: All side branches should be cut off to within two or three inches of the stem or body of the trees, thus leaving a stub where each branch was cut off, which is better than to cut the branch off close to the stem, as the buds on the stubs will start to grow sooner after transplanting than those on the stem, besides causing the tree to grow more stocky and less top-heavy than if the branches are cut off close to the stem; it is well to cut a little of the top off if the wood of the tip is not well ripened. No more trimming will be necessary the first year, only to rub off the tender sprouts that may come up from the roots. At the end of the first year after planting, trim everything off the body up to a foot above the surface of the ground; the second year, up to two feet; the third year, up to three feet; the fourth year, up to four feet; then stop, unless a higher head is desired; from year to year during this time those branches that grow faster than the others should be shortened in; the tops may require to be cut off a little and some of the inside branches taken out to let the light and heat of the sun into the interior of the trees. By pursuing this course the trees will become stocky, symetrical and handsome, even if very slender and crooked ones were planted, and they can thus be made to assume a form something like a goblet, which is believed to be the most desirable shape in which they can be trained.

HOW FAR APART TO PLANT OLIVE TREES.—The distance apart to plant olive trees so as to get the best results has been determined by Ellwood Cooper, an experienced olive grower. He planted an orchard in 1872 with the trees 20 feet apart—108 to the acre—and some fifteen years afterwards he found it necessary to thin out, and removed every other diagonal row, the remaining trees then being about twenty-eight feet apart. If it is necessary to thin out again, he recommends the removal of every alternate straight row; the remaining trees will then be 40 feet apart. As he still favors this plan, after years of experience, planters may safely follow his example. This appears to be better than to plant the trees farther apart at first with some short-lived trees or vines between them, as is sometimes recommended. The trees which are removed may be reset into a new orchard, where they will again come into profitable bearing.

SOIL.—As to the kind of soil in which the olive succeeds, the same authority says: "that he has trees growing without irrigation in the black adobe, on stony hillsides, on adobe hillsides, on table lands with clay subsoil, in sandy land made from the wash of the mountains, with no difference in the bearing of the trees or the oil made." They are known to succeed where peach, apricot and nectarine trees have been destroyed by the black alkali, and also in land so rocky and steep that it cannot be plowed. Our virgin soils of California are rich in lime and potash, two of the chief constituents required by the olive tree. Professor Hilgard has stated that the substance of olive oil is taken entirely from the air, and that if the crop is made into oil and the pomace and all other offal returned to the land from the outset it needs no other manure, if the soil is a fairly good one; it does not wear out the soil; but if the fruit is pickled, returns should be made to the soil, and then potash and nitrogen are especially called for.

CLIMATE.—The olive tree flourishes under varied climatic conditions, near the sea coast and in the interior of continents. It will withstand a temperature of 14° above zero, and it succeeds in the dry interior valleys of this state, where the mercury during summer often ranges from 100° to 120° in the shade, also along the coast and on the high foothills of our mountain ranges. In Algeria (latitude 35), it thrives at an elevation of 4,800 feet; in Italy, at a height of 3,200 feet; and there is a bearing orchard in about the latitude of Pomona, situated upwards of 3,000 feet above the sea-level.

SIZE, LONGEVITY, AND PRODUCTIVENESS OF OLIVE TREES.—"The trees went forth on a time to anoint a king over them; and they said unto the olive tree, 'Reign thou over us.'"—Judges ix, 8. Consul Hathaway states that lately an olive tree was carelessly destroyed in the vicinity of Nice, France, which had a positive record of five centuries and measured 36 feet in circumference when it fell. Prof. Aloi informs us that the production of some of the largest olive trees of Sicily sometimes reaches 264 gallons; the trunk of one of those trees measured 26 feet and 4 inches in circumference at 5 feet, 9 inches from the ground. An olive tree near Marseilles, France, is mentioned by Ceyreste, which is thought to be 900 or 1,000 years old and so gigantic that it can harbor in its interior 20 persons. 500 olive trees were planted at the San Fernando Mission about the year 1800. There are now left 450. In 1881 the trees were severely pruned, the branches being entirely lopped off and made into firewood; some of the trunks are 2 feet in diameter. They commenced bearing again the second year after being pruned, and the crop has gradually increased so that it now amounts to upwards of eighteen tons annually. An olive tree at the Mission San Jose, in this state, measures around the trunk 68½ inches about two feet above the ground. It is about forty feet high. It bears annual crops of large fruit. Mr. Davis, who had charge of the San Diego Mission orchard, which is more than 100 years old, states that he gathered 150 gallons of olives, two years in succession, from a single tree in that orchard. A five-year-old Nevadillo blanco olive tree in the orchard of Alfred Wright, Pomona, measures 8 inches in diameter, 2 feet above ground, and has attained the height of more than fifteen feet without irrigation.

The following extract is from an address by Hon. Charles Dondero, Italian consul at San Francisco: "There are no two countries in the world so similar in topographical conformation, position, climate and agricultural products as Italy and California. The olive is justly considered the Providence of Italy. It was undoubtedly cultivated there before Cassandra's prediction on the fate of Troy—before Homer immortalized the wrath of Achilles. According to history, the great olive trees yet seen around Tivoli, whose gigantic forms rival the majestic sequoias of the Sierras, were already old when Romulus traced with a plow the walls of Rome. Since then, mighty rulers, powerful empires, bright and barbarous civilizations, have arisen and disappeared; but the olive giants, untouched by all vandalic invaders, respected by the hurricanes of 30 centuries, are there, covering nearly an acre of ground each, vigorous and productive as in the days of Christ. The average duration of this tree, however, is considered 250 years—long enough for us all. Its production increases until the age of 40 or 50 years. It remains then about the same from year to year, if properly managed, with a perceptible improvement in the oil."

IRRIGATION.—The olive is a deep-rooted tree, flourishing in arid countries and, if properly treated from its first planting, requires but little water in most locations other than the usual rainfall. There are many bearing olive trees in different parts of the state that are not irrigated. While there are locations that will give the best results without irrigation, there are no doubt other locations that need it, but in most of such lands, careful tillage and, in the absence of better means, hauling water to them when needed will be time well spent, if the reward of an olive orchard may be thus secured. But, while the trees will do fairly well under conditions in which any other fruit tree would perish, it pays to give them generous culture. Mr. F. Closs, the owner of a fine young olive orchard north of Auburn, Placer county, in speaking of irrigation and the olive, said: "When I set out my olive trees I determined to see what they would do with and without irrigation. I irrigated some rows thoroughly, while other rows I didn't irrigate at all. At the end of the season I couldn't tell the difference between the irrigated and non-irrigated trees. I came to the conclusion that olives would do just as well without water as with it."

OLIVE TREES FOR SHADE AND ORNAMENTAL PURPOSES.—A great many olive trees have been planted lately in this section along the streets, avenues and roadsides, and they are rapidly growing in favor. It has become evident that they are not easily uprooted by strong winds after heavy rains and that they thrive well under the neglect which generally falls to the lot of street trees; they are clean and handsome and, if properly pruned, have no drooping branches to obstruct the sidewalk. They yield a generous revenue from the fruit, which is not subject to the depredations of boys, or others—at least, not the second time. Considering their long life, their sturdy growth under unfavorable conditions, their beauty and the value of their crops, they are unsurpassed for the purpose.

INSECT PESTS.—The only insect pest that infests the olive tree in this state is the black scale, which attacks it, in locations near the coast, about the time it begins to bear, but in the interior the tree is not infested with it. Even the olive tree is unable to bear a full crop of fruit and a full crop of black scale at the same time. Perhaps nothing has retarded the olive industry more than the neglected, scale-infested trees in certain localities, which, by proper care, might have been kept in a profitable condition. Any other fruit tree would have been dead and out of sight long ago under the same neglect. Lately, improved methods of dealing with the pests have come into use, and they may now be destroyed at comparatively small expense by spraying the trees with the following mixture, during autumn, when the insects are all out of their scales:

5 pounds of caustic soda, 70 per cent.
25 pounds of resin
3 pints fish-oil

Boil the soda, resin and oil in 20 gallons of water for three or four hours When done, the mixture should dissolve readily, like milk, in water, without being ropy. Add enough water to make 100 gallons; in case the resin after cooking does not cut well, add a little more water. A treatment of the trees with hydrocyanic acid gas, in autumn, once in two years, is also found to be an effective remedy. Parties here contract to rid trees of the pests by either method at 20 to 25 cents per tree, furnishing everything. Mr. Goodrich, of Santa Clara county, says: "His system of pruning (the goblet form, which he adopted three years ago), by the aid of the twice-stabbed lady-bird, has reduced the black scale in his orchard to such a degree as to justify the belief of practical eradication, or, at least, control." Fruit raisers in California have insect pests to combat, and so have olive growers located near the coast; happily, by the above methods they may be subdued at a cost so low as to justify the expenditure.

OLIVE OIL.—California olive oil has the distinction of winning medals at the Paris Exposition, where there were 606 exhibits of olive oils. Its superiority over imported oil is generally conceded. We have it from reliable authority that at least four-fifths of the olives used in Europe for oil contain a worm which is ground up and pressed with the pomace in oil-making. From the consular reports we learn that it is a common practice abroad to mix cottonseed oil with the olives while being ground. Vast quantities of this oil go to Europe from this country for the purpose of adulterating olive oil. The process of refining cottonseed oil is said to be such as to render its use as food injurious to health and even dangerous to life. The Department of Agriculture, at Washington, caused tests to be made of some 66 different brands of imported oil, labeled "pure olive oil." Not one brand was found to be pure, and several did not contain any olive oil. There can be no doubt of the impurity of imported oil, but California producers are determined that the home oil shall be put upon the market pure and unadulterated. To this end, they have procured the passage of an act to prevent the manufacture and sale, in this state, of impure olive oil, and have organized to aid in its enforcement.

THE MAKING OF OIL.—Olive oil of excellent quality is made in this section by crushing the olives in a cider mill and expressing the oil with the press belonging to the mill, using a cloth of strong material to hold the pulp during the operation. The oil comes from the press mixed with the water of the fruit, but it will gradually come to the surface and may be skimmed off and filtered through cotton to clear it from particles of pulp. Everything coming in contact with the oil and pulp should be as clean as possible. By the above means the olives of a good sized orchard may be converted into oil; for very large crops, greater facilities would be required, but custom oil mills, no doubt, will be erected to keep pace with the increased product; even this early there are several firms in this section who have put up inexpensive works for oil making, buying olives from the growers, the ruling price last year (1892) being $100 per ton.

THE QUANTITY OF DOMESTIC AND FOREIGN OIL PRODUCED AND AMOUNT IMPORTED.—There was produced in this state in the year 1889, 1,141 gallons pure olive oil; in 1890, 5,202 gallons; in 1891, 11,420 gallons. In the year 1890 there was imported into this country 893,984 gallons of alleged olive oil, which was more than double the amount imported here in 1881. The annual output of olive oil of different foreign countries is variously estimated; one authority gives as follows: Italy, 70,000,000 gallons; Spain, 15,000,000 gallons; Portugal, Algeria, Tripoli, Egypt, Greece, Dalmatia, and some other countries, 18,000,000 gallons. The annual yield of Italian oil is valued at $120,000,000, which is more than the value of all the wheat exports of the United States for 1891.

THE YIELD OF OIL OF DIFFERENT VARIETIES, GROWN IN DIFFERENT LOCATIONS.—The Agricultural Experiment Station of the University of California, in Bulletin 92, gives the following results of tests made:

Manzanillo, from Berkeley,	25.45%	of oil
Nevadillo blanco, from Berkely,	30.3 %	"
Manzanillo, from Fresno,	22.1 %	"
Nevadillo blanco, from Fresno,	22 %	"
Rubra, from Fresno,	21.97%	"
Pendulina, from Fresno,	20.5 %	"
Atro-Vialacea, from Fresno,	18.1 %	"
Nevadillo blanco, from Mission San Jose,	31.5 %	"
Mission, from Mission San Jose,	24.9 %	"

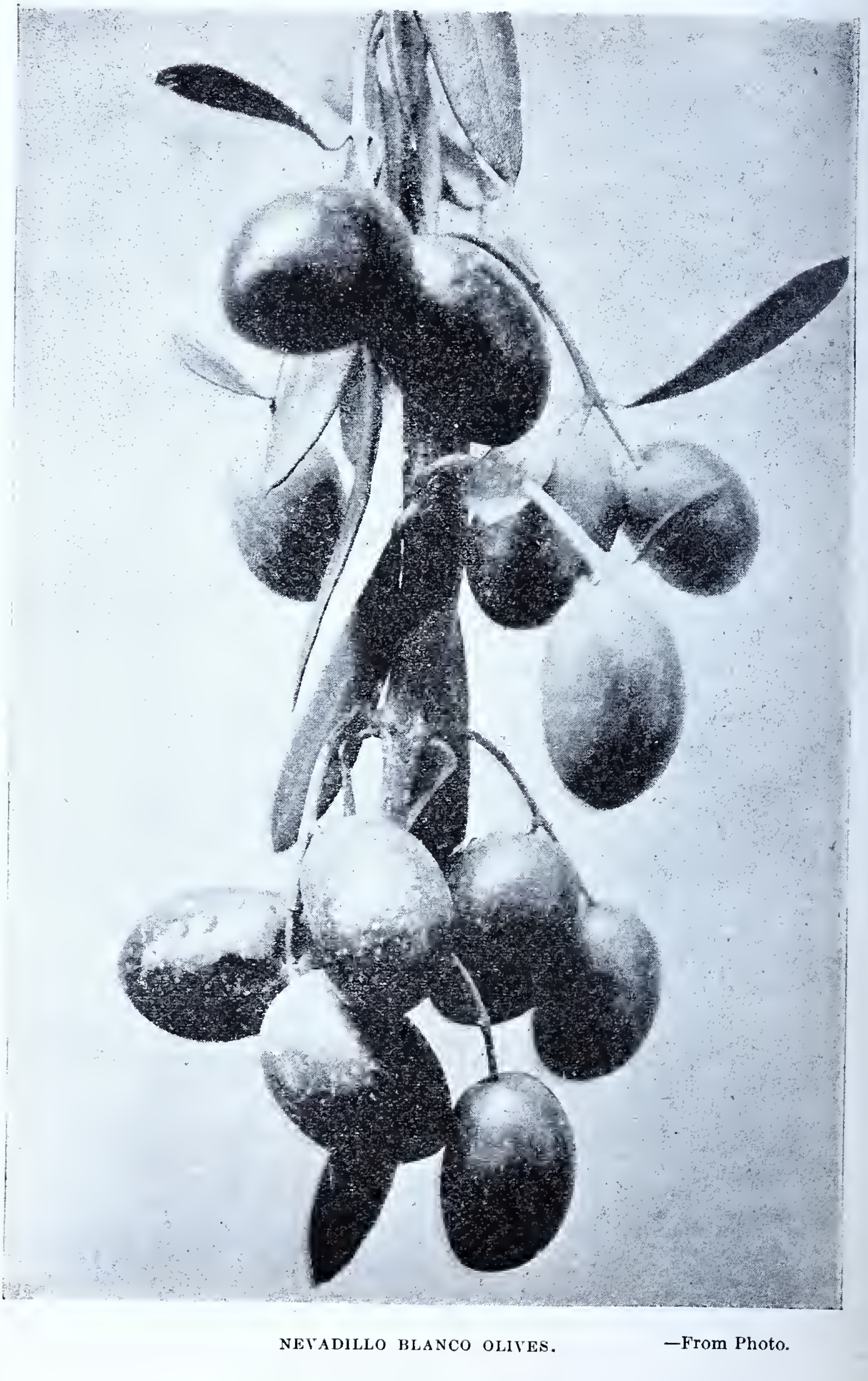
An analysis made by Dr. S. M. Woodbridge, of the Agricultural Chemical Works of Los Angeles, of olives grown this season at Pomona, gives the following results:

Nevadillo blanco,	25.7%	of oil
Manzanillo,	22.1%	"

A test of olives grown in Italy shows a percentage of 14.13% of oil, variety not reported. On flat lands, with frequent rains, less oil and more water exists in the fruit, while on hillsides with less water the yield is put at 1 gallon of oil to 4 gallons of fruit. In France, it is considered that 8 gallons, or 50 pounds, of fruit will yield a gallon of oil. Olives weigh from 4½ to 6 pounds to the gallon.

USES OF OLIVE OIL.—Dr. A. E. Osborne says: "It stands unrivalled as an element of natural food. It is a remedy for all wasting diseases. It possesses a direct alterative effect in constitutional diseases. It exerts a distinctive effect upon the liver." Dr. R. C. Early writes: "Olive oil is a sure cure for gall stones if given freely. I use it with good results, in my practice, for piles of long standing. For snake bites, I have never known it to fail of a cure, and I have had a large practice in a section where rattlesnakes and copperheads abound, employing no other remedy." It can hardly be expected that oil will wholly take the place of the popular remedy for snake bites usually taken along, as well as taken, on camping trips. The following is from Dr. P. C. Remondino: "The olive has been a food producer of the greatest value, and Palestine, in its palmiest days, received the major part of its regal revenues from the product of its olive groves, the oil being then exported into the countries to its north, where it came to form a large part of their dietary. Tyre was a large consumer of olive oil, as we may well infer from the fact that King Solomon furnished to mechanics sent to him by King Hiram, 150,000 gallons of that article for their food supply. Among the ancients, olive oil entered largely into their fare.

PICKLED OLIVES.—Large quantities of foreign pickled olives come to the United States, and to this state, which are sold in small bottles at the rate of about four dollars per gallon. They are put up while the olives are green, and are unfit for food, while the home olives are put up ripe, or nearly so, and are a wholesome and nutritious food, vastly superior to the foreign article. The last crop sold in the stores at $1.20 per gallon. Dealers paid the growers from 65 cents to $1 per gallon.



NEVADILLO BLANCO OLIVES. —From Photo.

METHODS OF PICKLING OLIVES.

With the use of Lye.—For 6 pounds of olives, dissolve 1 pound of G. T. Lewis' concentrated lye in 6 gallons of water; add 4 pounds of salt; soak the olives in this mixture 2 days, then draw off and replace it with the same kind for 2 days longer, or until the bitterness is discharged, drawing the mixture off several times daily and pouring over the olives. Now draw off the mixture again and immerse the olives in water from 5 to 8 days, then draw off the water and put on a brine of 3 pounds of salt to 6 gallons of water, for 2 days, or until the least trace of lye is removed; finally cover them with new brine of 3 pounds of salt to 4½ gallons of water.

Without Lye.—Pick the fruit when fully ripe, but not soft, having all the olives as near the same degree of maturity as possible. Place in a vessel of convenient size and cover with clear, cold water; renew the water every day for 30 or 40 days, or until all bitterness has been removed. Then place them in such receptacles as desired, and cover with brine strong enough to bear up an egg. In a few days the pickles will be in prime condition for the table, and will keep indefinitely.

Another method without Lye.—Take a sharp knife and make three incisions to the pit of each olive, dropping into cold water as you work. Ripe olives should be used. When the olives are all cut, place them in a new oak cask, with a faucet at the bottom from which to draw off the water. Cover the fruit with cold water, changing three times a day, until the bitterness is extracted. If the work is carefully done, at the end of 21 days the olives will be found, upon testing, to be sweet. If the olives are fully colored but still hard when they are cut, this part of the process may require 28 days. When the bitterness is extracted, cover with brine made of the purest salt. Let the olives remain in this brine just long enough to make them palatable. This point of the process will be reached in 24 or 48 hours, depending on the strength of the brine.

VARIETIES.—According to an Italian authority, there are 300 varieties of olives. I have upward of fifty new varieties in course of propagation in my nurseries. Many of these are in bearing in different parts of the state and have proved valuable acquisitions. By careful observation, the different varieties may be distinguished from each other in the nursery by their appearance, which will greatly assist the nurseryman in correctly labeling his trees.

Following is a list of my collection:

Nevadillo blanco,
Mission,
Rubra,
Oblonga,
Uvaria,
Præcox,
Rufa,
Ascolana,
Santa Catarina,
Manzanillo,
Columella,
Pendulina,
Regalis,
Macrocarpa,
Atro-Vialacea,
Morinello,
Leccino,
Piengente,

MANZANILLO OLIVES. —From Photo.

Infrantoia,
Redding Picholine,
Razza,
Gentile,
Empeltra,
Oriola,
Luques,
Huff's Spanish,
Correggiola,
Oblizza,
Lavignon,
Amelan,
Dalmatian,
*No. 45,
Taggiasco,
Rapuina,
Radiola,
Bellmonte,
Hispania,
Nostralis,
Præcox Seedling.
Polymorpha,
True Picholine,
Frantoia,
Grossaia,
Nigerina,
Cayon,
Verdale,
*No. 34,
*No. 36,
Cucco,
Atro-Rubens,
Salonica,
Mignolo,
Attica,
Columbaro,
Pendoulier,
Rossalina,
Olivastra,
St. Agostino,
Bella de Espagne,

*The names of those varieties designated by numbers are not yet positively known.

Most of the above varieties are planted both for oil and pickles, but the following, owing to their size and other desirable qualities, are preferred for pickling:

Manzanillo,
Columella,
Grossaia,
Santa Catarina,
Regalis,
Ascolana,
St. Agostino,
Hispania.

CHARACTERISTICS OF THREE LEADING VARIETIES.

Nevadillo blanco.—Fruit, medium to large size, oval, slightly oblique, with small pit, ripens early in November. Tree, a very robust and vigorous grower—more so than any other variety in my collection—and is remarkable for its resistance to the attacks of black scale where that pest prevails; it has a record as a heavy bearer and succeeds in the hottest as well as in the coolest portions of the state. In Bulletin 92 of the Experiment Station of the University of California it was singled out from other varieties as being the best for oil, and recommended for general planting.

Manzanillo.—Fruit, large, nearly round, free stone, with a very small pit, ripens early in November—some seasons in October—makes a high-grade oil; the pulp parts easily with its bitterness and is exceedingly rich when pickled, resembling the Queen olive from Spain; trees bear young and heavily. Of all the varieties tested, it was recommended in Bulletin 92 as the best olive for pickling. The trees from which my Nevadillo and Manzanillo nursery stock was propagated bore fruit at three years of age.

Mission.—This variety was brought to the state by the Mission fathers more than 100 years ago. Many of the trees then planted are still in a bearing condition, though receiving little care. Nearly all the oil and pickled olives thus far produced in the state have been made from the fruit of this variety. Owing to its vigorous growth, large size, and erect habit, it is preferred to other varieties for street planting. The fruit varies somewhat in form, is free stone, medium to large size, ripens in December and makes oil and pickles of excellent quality. There is a difference in the fruit and in the behavior of the trees known under the name of Mission. The trees from which my nursery stock of this variety is propagated bear young and annually.

RETURNS RECEIVED FROM OLIVE TREES.

Robb Bros. & Wilder, of Riverside, bought the olives last year on 8 trees, 7 years old, growing along a street of that place, for $50, and paid for the gathering.

60 trees, some eight years old, on the old homestead place of the late Gov. Waterman, a few miles north of San Bernardino, yielded $6.50 each the past year.

Geo. F. Hooper, of Sonoma valley, reports that he has 90 trees on an acre that yielded 40 cases of first-grade oil and a considerable quantity of second grade. The 40 cases sold for $480.

Dr. Clark of Auburn, Placer county, realized $200 per acre from 6-year-old trees.

The 11-year-old trees of Mrs. Emily Roberson, of same place, are reported to yield fruit valued at $15 to $20 per tree.

J. S. Harbison, of San Diego, writes: "The olive trees in my orchard were grown from cuttings planted in February and March, 1888. In December, 1890, I picked from one tree a gallon of olives; this year (1891) there are 10 per cent. of my trees that will yield from 3 to 5 gallons; the great majority will yield from 1 quart to 2½ gallons."

"Six years ago," says the *Auburn Herald*, "William Shillingsburg purchased an 80-acre tract of about the poorest land in the neighborhood, on one of the highest and driest hilltops near Newcastle, Placer county. He pulled up stumps, grubbed out brush, quarried rocks, reclaimed old mined-out land, and filled up mining cuts. He has now, upon what was regarded the worst part of the 80, a bearing olive orchard which yielded this season 5,000 gallons of olives. It is located high above his irrigating ditch, on red granite soil, which looks so parched and burnt as almost to cause one to believe that his Satanic majesty had for generations past used it for a gridiron; no water other than the rain has ever touched the land, and the owner says he would drive a man off with a gun if he found him fooling around his trees with water."

Mr. Olmstead, of New York, has a 4-acre olive orchard here which commenced bearing last year, being 4 years of age. The fruit this year was bought by a local firm for 5 cents per pound, or about twenty-five cents per gallon. The returns were $100 per acre. Had the owner made his olives into pickles himself, which is the custom here among growers, he would have received 80 cents per gallon for the pickles, or nearly $400 per acre.

A neglected olive orchard near Pomona, having had several non-resident owners, came under the care of the late G. C. Muir, who was wholly inexperienced in olive culture. He made that season 3,000 gallons of pickled olives, which sold from 75 cents to $1 per gallon; he also made considerable oil, which won the first prize at the Citrus Fair in Los Angeles. The returns from about three hundred trees amounted to upward of $2,500. He thus demonstrated that even a beginner can make excellent oil and pickles with simple and cheap means. His entire apparatus cost less than $100.

There are 50 olive trees along the roadside near West Glendale, in this county, which averaged 228 pounds of olives to the tree this season. A fruit firm bought them at 3½ cents per pound (the ruling price at Pomona was 5 cents per pound), and made them into pickles. The owner received less than 20 cents per gallon, but at even this low price, his returns from each tree amounted to about $8. If he had made the crop into pickles himself, and sold at market rates, he would have received nearly $40 per tree.

Mr. Ellwood Cooper, of Santa Barbara, states that he tested one of his orchards, 7 years old from the cuttings, which yielded 10 large bottles of oil to the tree. $1 per bottle is the present wholesale market price for California oil. This would give $1,080 per acre of 108 trees.

Frank Kimball, of National City, San Diego county, states: That the olives from 6-year-old trees, when pickled, would bring $16 per tree; that he paid a neighbor $200 per acre for his olives from trees less than 4 years old from the cutting; that he had taken 23 gallons from a tree less than 6 years old; these, if made into pickles and sold for 75 cents per gallon, would bring $1.863 per acre for that year. He also had picked from a tree at the old San Diego Mission 192 gallons in a single year. This tree was probably 100 years old.

Dr. B. B. Briggs, of Crescenta, Los Angeles county, has a tree that bore one year, when 13 years old, 50 gallons of olives, and if made into pickles and sold at 75 cents per gallon, they would bring $37.50.

Major L. H. Utt, of Redlands, has an orchard, at Pala, San Diego county, of 100 trees that, when 16 years old, averaged 80 gallons of olives per tree that year.

Mr. G. F. Havens, of Santa Ana, writes that he has an orchard in Orange county, 15 miles from the coast, at an elevation of 1,500 feet, planted at the foot of an adobe hill; trees have never been irrigated and have never been infested with the black scale; they bore a little fruit the third year from the cutting; the fourth year they bore from 1 to 4 gallons per tree, and at the age of 7 years some of them bore 20 gallons that year. Thus it will be seen that in some cases the trees will show a little fruit the third year from planting and yield returns the fourth year.

Mr. Henry H. Wheeler, of Pomona, has about four hundred olive trees, 5 and 6 years old, 22 feet apart, making the orchard a little less than 4½ acres. The crop for this season was 7,638 pounds, which he sold from the trees at 5 cents per pound, about twenty-five cents per gallon. The crop brought $381.90, or $86 per acre. If he had made the crop into pickles and sold at wholesale market rates, his returns would have been about $384 per acre. His trees have not been irrigated since they were set in orchard and the fruit has never wilted on the trees. The trees from which these various results were obtained are of the Mission variety.

Although it is only a few years since olive culture in California was begun as a business, many other instances might be cited to show what large returns the industry yields.

THE OUTLOOK FOR THE OLIVE INDUSTRY ON THIS COAST.—From the foregoing, it will be seen that our conditions are eminently favorable to the production of abundant crops of olives, and that olive culture would be very profitable, even at lower prices than have been hitherto obtained. That the demand will keep up with the supply there can be no reasonable doubt. In foreign olive-growing countries, olives, in some form, constitute a staple article of food, yielding immense revenues, a chance failure of the crop being a distressing calamity felt by all classes. The compound called olive oil and the unripe pickled olives (put up in that state so that they may keep a long time), which are imported in large quantities, will never come into universal use in this country; hence, our own vast territory will afford a market for all the pure oil and ripe, nutritious pickled olives we may be able to produce. As soon as we can offer the goods in sufficient quantity, they will displace the inferior imported article, not only in our own markets, but our pure oil especially will be in demand in foreign markets now obliged to handle a notoriously impure oil. The sardine industry in Europe has declined, on account of the substitution of inferior oils in packing the goods instead of pure olive oil. Sardines abound in our waters, and it is stated by the press that the canning of them will be commenced at Astoria, Oregon, this season. The industry of packing sardines is destined to grow into large proportions on this coast, the only drawback being a present lack of olive oil with which to put them up. Large quantities of oil will be required in time for this purpose. A very small percentage of the people of this state, to say nothing of the country at large, have ever tasted a California olive. When olives come into such universal use here as they are in the olive-growing countries of Europe, the amount required to supply the demand will be enormous. That olives, in time, will become as universally used and as highly valued by our people as they are by the Latin race in the olive-growing regions abroad is evidenced by the fact that in those few localities in this state where olives are grown, they have come into general use as a food among all classes, the local demand in these little olive centers being so great and the supply so meagre that in a few weeks the yearly output is consumed, and that, too, chiefly in the vicinity where produced. So we may conclude that they are not yet generally used by the masses simply because they cannot be obtained. It is noteworthy that the supply of domestic olive oil and pickled olives is always far short of the increasing demand; that olives can be produced on cheap lands, and in many sections without irrigation; that the crop may be handled after deciduous fruits are out of the way, at a time when labor is plentiful, and when prepared for use may be held and marketed at leisure; that the oil, in particular, may be freighted to distant markets if necessary, at small expense.

With all the inducements which olive culture now presents, it must soon come to the front as one of our chief and most profitable industries.